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EXAMINER

ODOM, CURTIS B

ART UNIT

PAPER NUMBER

2634

7

DATE MAILED: 08/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/650,236

Applicant(s)

HE, GUOYU

Examiner

Curtis B. Odom

Art Unit

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 August 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 19-24 and 26-31 is/are allowed.
- 6) ☒ Claim(s) 1-5 and 11-18 is/are rejected.
- 7) ☐ Claim(s) 6-10, 25 and 32 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 August 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other:

DETAILED ACTION

Claim Objections

1. Claims 6-10 are objected to because of the following informalities:
 - a. In claim 6, lines 19, the phrase “provide at least one output signal” is suggested to be changed to “provide at least one output signal”.
 - b. In claim 6, line 20, the phrase “the RF signal’s reference” is suggested to be changed to “an RF signal’s reference signal”.
2. Claims 8-10 are objected to because of the following informalities: The word “claims” is suggested to be changed to “claim”. Appropriate correction is required.
3. Claims 9, 18, 25, and 32 are objected to because of the following informalities: The phrase “an signal” is suggested to be changed to “a signal”. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.
5. Claim 1 is rejected under 35 U.S.C 112, first paragraph as being a single means claim with under breadth. The claim covers every conceivable structure for

Art Unit: 2634

achieving the stated property while the specification discloses at most only those known to the inventor. See MPEP § 2164.08(a).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Currie et al. (U.S. Patent No. 5, 230, 097).

Regarding claim 1, Currie et al. discloses a method using an electronic circuit (Figs. 1 and 2) comprising:

combining (Fig. 1, block 15) a radio frequency signal (Fig. 2, signal channel RF input), its reference signal (reference channel RF input), and a third signal (column 7, lines 49-58) which has a predetermined frequency to provide a new signal (IF DIGITAL DATA), wherein the new signal's frequency is solely responsive to the predetermined frequency (column 8, lines 40-56). Currie et al. does not disclose the new signal's phase is responsive to that of the RF signal.

However, Currie et al. discloses the new signal is further processed to output phase and amplitude information of the new signal (column 8, lines 7-16). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made that since the new

Art Unit: 2634

signal is a combination of the RF signal and the reference signal that the new signal's phase could be responsive to that of the RF signal. This would allow for successful synchronization between the RF transmitter and the receiver.

Regarding claim 2, which inherits the limitations of claim 1, Currie et al. discloses generating the third signal using a crystal-stabilized oscillator (Fig. 3, block 72, and Fig. 5, block 90 column 10, lines 27-33), wherein the oscillator in Fig. 3 can also be a crystal oscillator as shown in Fig. 5.

Regarding claim 3, which inherits the limitations of claim 1, Currie et al. discloses converting the RF signal and its reference signal to an intermediate frequency (Fig. 2, blocks, 40a and 40b, column 9, lines 21-48).

Regarding claim 4, which inherits the limitations of claim 1, Currie et al. discloses converting the new signal to a signal selected from the group consisting of an audio, video, digital, and analog signal (Fig. 1, block 22, column 8, lines 8-30).

Regarding claim 5, which inherits the limitations of claim 1, Currie et al. discloses transmitting the RF signal using an electronic conductor selected from the group consisting of antenna and cable (Fig. 1, block 28, column 7, lines 15-26).

8. Claims 11-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Currie et al. (U.S. Patent No. 5, 230, 097) in view of Atherly et al. (U.S. Patent No 5, 140, 198).

Regarding claim 11, Currie et al. discloses all the limitations of claim 11 (see rejection of claim 1) including an apparatus comprising a signal source (Fig. 2, block 10), three multipliers (Fig. 1, blocks 40a, 40b, 38a and 38b), and an adder (Fig. 1, block 15). Currie et al. does not disclose two 90 degree phase shifters.

Art Unit: 2634

However, Atherly et al. discloses two 90 degree phase shifters (Fig. 1, blocks 32 and 42) used in converting an RF signal to a new signal. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Currie et al. with the phase shifters of Atherly et al. in order to shift out of phase components of the signal to obtain phase synchronization in the device.

Regarding claim 12, which inherits the limitations of claim 11, Currie et al. discloses the signal source is a crystal-stabilized oscillator (Fig. 3, block 72, and Fig. 5, block 90 column 10, lines 27-33), wherein the oscillator in Fig. 3 can also be a crystal oscillator as shown in Fig. 5.

Regarding claim 13, which inherits the limitations of claim 11, Currie et al. discloses at least one power splitter (Fig. 2, block 60)

Regarding claim 14, which inherits the limitations of claim 11, Currie et al. discloses at least one signal amplifier (Fig. 2, blocks 42a and 42b).

Regarding claim 15, which inherits the limitations of claim 11, Currie et al. does not disclose at least one automatic gain circuit. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include an automatic gain circuit to automatically adjust the gain of the circuit to obtain a constant received signal level. The use of an automatic gain circuit is widely known and conventional in the art. Thus, the use of an automatic gain circuit does not constitute patentability.

Regarding claim 16, which inherits the limitations of claim 11, Currie et al. discloses another apparatus for converting the RF signal to an intermediate frequency (Fig. 2, blocks, 40a and 40b, column 9, lines 21-48).

Art Unit: 2634

Regarding claim 17, which inherits the limitations of claim 11, Currie et al. discloses at least one harmonic mixer and one local oscillator (Fig. 2, block 36 and Fig. 4, block 115).

Regarding claim 18, which inherits the limitations of claim 11, Currie et al. discloses a device for converting the new signal to a signal selected from the group consisting of an audio, video, digital, and analog signal (Fig. 1, block 22, column 8, lines 8-30).

Allowable Subject Matter

9. Claims 6-10, and 19-32 allowable over prior art (if objections stated above are overcome) because related references do not disclose combining an RF signal with another signal to produce an output signal, combining the output signal with a reference signal to produce two new output signals and combining the two new output signals to provide a new signal whose phase is responsive to the RF signal.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Curtis B. Odom whose telephone number is 703-305-4097. The examiner can normally be reached on Monday- Friday, 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 703-305-4714. The fax phone numbers for the

Art Unit: 2634

organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Curtis Odom
August 19, 2003



STEPHEN CHIN
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